

CLAIMS:

1. A plasma processing apparatus for manufacturing a semiconductor device comprising:
  - means for applying bias powers to a substrate to be processed and a material adjacent to said substrate;
  - means for adjusting a feeding impedance for the bias power applied to said material; and
  - means for adjusting feeding impedances for the bias powers to a plurality of positions on the substrate so as to make electrons projected to the substrate from the plasma uniform within a surface of said substrate.
2. A plasma processing apparatus for processing products by using plasma comprising:
  - means for applying bias powers to a substrate to be processed and a material adjacent to said substrate; and
  - first adjusting means for adjusting feeding impedances for the bias powers to different positions in said substrate differently so as to make electrons projected to said substrate from plasma uniform within a surface of said substrate.
3. A plasma processing apparatus according to claim 2, wherein said first adjusting means acts to fix amplitude difference of high frequency voltage within a surface of an electrode.
4. A plasma processing apparatus according to claim 2, wherein said first adjusting means includes an insulating layer formed between an electrode for mounting thereon said substrate and said substrate and including a plurality of layers or materials, a first feeding line for bias power,

and conductive material provided in at least one of said layers and connected to said first feeding line insulated from said electrode.

5. A plasma processing apparatus according to claim 2, further comprising second adjusting means for adjusting a feeding impedance for the bias power to the material adjacent to said substrate.

6. A plasma processing apparatus according to claim 5, wherein said second adjusting means includes an insulating layer formed between an electrode for mounting thereon said substrate and said material adjacent to said substrate and including a plurality of layers or materials, a second feeding line for bias power, and conductive material provided in at least one of said layers and connected to said second feeding line insulated from said electrode.

7. A plasma processing apparatus comprising a processing chamber, means for applying a high frequency into said chamber, means for supplying a processing gas, an electrode subsystem disposed in said chamber and including an electrode for mounting thereon a substrate to be processed, wherein said electrode subsystem comprises:

means for applying bias powers to a substrate and a material adjacent to said substrate;

first adjusting means for adjusting feeding impedances for the bias powers to different positions in said substrate differently so as to make electrons projected to said substrate from plasma uniform within a surface of said substrate; and

second adjusting means for adjusting a feeding impedance for the bias power to said material adjacent to said substrate;

wherein said first adjusting means comprises an insulating layer provided between said electrode for mounting said substrate and said substrate and including a plurality of layers or materials; a first feeding line for the bias power; and a conductive material provided in at least one of said layers and connected to said first feeding line insulated from said electrode, and said second adjusting means comprises an insulating layer provided between said electrode for mounting said substrate and said material adjacent to said substrate and including a plurality of layers or materials; a second feeding line for the bias power; and a conductive material provided in at least one of said layers and connected to said second feeding line insulated from said electrode.

8. A plasma processing apparatus for processing a specimen using a plasma comprising:

- a processing chamber within which a plasma is generated;
- a table mounting a specimen within said processing chamber;
- an electrode provided in said specimen mounting table and electrically insulated from said specimen mounting table within a rear surface of said specimen;

- means for applying a bias power to said mounting table on which said specimen is mounted and said electrode; and

- means for adjusting feeding impedances of said bias power in said specimen mounting table and said electrode so that electrons from the generated plasma may be injected uniformly to said mounted specimen within the surface of the specimen.

9. A plasma processing apparatus for making a semiconductor device comprising:

a processing chamber within which a plasma is generated;  
a table mounting a substrate within said processing chamber;  
an electrode provided in said substrate mounting table and electrically insulated from said mounting table within a rear surface of said substrate;

a member provided on said mounting table and adjacent to said substrate;

means for applying bias power to said table on which said substrate is mounted, said electrode and said member adjacent to said substrate;  
and

first adjusting means for adjusting feeding impedances of bias power to said electrode with respect to said mounting table and

second adjusting means for adjusting feeding impedances of bias power to said member adjacent to said substrate with respect to said mounting table, said first adjusting means and said second adjusting means making electrons from the generated plasma to be injected uniformly to said mounted substrate within the surface of the substrate.

10. A plasma processing apparatus according to claim 9, wherein said substrate is a semiconductor wafer and said member adjacent to said substrate is an electrically conductive ring surrounding said semiconductor wafer.

11. A plasma processing apparatus capable of applying bias powers to a substrate to be processed and a material adjacent to a main rear surface of said substrate, said plasma processing apparatus comprising:

an electrode for mounting thereon a substrate to be processed by plasma; and

means for changing a feeding impedance for the bias power depending on a position of the electrode so as to make the electrons injected to the substrate to be processed from the plasma uniform within the surface of said substrate.